Remarks

On November 7, 2006, applicants' undersigned attorney held a telephone conference with Examiner Everhart for the purpose of clarifying the status of claims 26-30 that are pending in this application. The Examiner stated that claims 26 and 27 stand rejected as set forth in the outstanding Office Action; that claims 28 and 29 should have been indicated in the Office Action as allowed; and that claim 30 stands objected to for the reason set forth in the Office Action. The substance of that telephone conference is confirmed in the the Interview Summary mailed by the Office on November 9, 2006.

Applicants note with appreciation the allowance of claims 28 and 29.

Claim 30 has been objected to as informal because of the perceived lack of antecedent basis for the recitation "the selected one or more." However, it is submitted that antecedent basis is provided by way of the phrase "**a** selected one or more" in the first line of that claim. Nevertheless, applicants have amended claim 30 to replace the definite article "the," deemed objectionable by the Examiner, with the indefinite article "a."

Claims 26 and 27 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,291,799 to Heyer et al. in view of the abstract of Japanese Publication No. JP357095624 of Tateishi et al. This rejection is respectfully traversed. Applicants' claims 26 and 27 are specifically directed to an "Apparatus for transporting substrates **within a vacuum chamber**, the apparatus comprising: a pair of spaced apart parallel metal belts positioned **within** the vacuum chamber; a translator for **bidirectionally** moving the pair of metal belts in concert; and **a plurality of aligned, periodically-spaced tabs positioned on an outer surface of each of the metal belts**

for retaining a plurality of the substrates in fixed positions spanning the metal belts." These features of applicants' claimed invention provide a substrate transport apparatus in which the substrates are retained in fixed positions spanning a pair of parallel metal transport belts located within a vacuum chamber, by means of a plurality of aligned, periodically-spaced tabs positioned on an outer surface of each of the metal belts. This specifically claimed substrate transport structure serves to prevent the undesirable coating of applicants' two transport belts during the vacuum deposition process to which their invention is directed. By exposing only the substrates to coating during vacuum deposition, the prior art problems associated with coating the transport belt, including jamming in the close tolerance seals during substrate motion, operator safety issues resulting from particle generation, and cross-contamination between the processes, are eliminated.

The Heyer et al. reference is directed to an apparatus for transporting silicon wafers 10 on a **single** conveyor belt 14 through an open ended furnace 12 for the purpose of heat-treating the wafers to which a coated film has previously been applied. The wafers 10 are placed on quartz trays or supports 20 that are, in turn, placed on a **single** conveyor belt 14. Spacer elements 23, 25 on the underside of the quartz trays 20 serve to elevate them above the single conveyor belt 14. Thus, the bottom surface of each of the wafers 10 of Heyer et al. is intentionally covered by the quartz trays 20 on which they are placed. This is totally unlike applicants' claimed invention, in which both the top and bottom surfaces of the conveyed substrates are fully exposed for deposition coating within their vacuum chamber, not simply heat treatment of previously coated wafers. In addition, the single belt 14 is taught by Heyer et al. to move in just

one **conveying direction** (col. 3, lines 46-50, col. 5, lines 32-36, and col. 5,line 66 through col. 6, line 1), not bidirectionally, as specifically taught and claimed by applicants.

The Examiner states that "Heyer et al. disclose an apparatus which includes a pair of spaced apart parallel metal belts (col. 4, lines 27-32 and Fig. 1 shows parallel belts 16) which are within the heat treatment apparatus (col. 1, lines 32-40) and periodically aligned spaced apart tabs on the belts (feature 20 in Fig. 1 and col. 5, lines 65-67 and col. 6, lines 1-5)." It is respectfully submitted that this statement by the Examiner is erroneous. The recitation at column 4, lines 27-32 of Heyer et al. describes the **single** conveyor belt 14 depicted in Figures 1 and 2 that passes **within** the heating unit or furnace 12. While the "second conveyor device 16" (col. 5, lines 17-26), although not described in the Heyer et al. specification, appears in Figure 2 to include two parallel belts, those belts and the conveyor device 16 which they form, are clearly located entirely **outside** of the furnace 12. Conveyor device 16 serves simply to return empty quartz trays 20, following removal of the heated wafers therefrom, to the entrance end of the furnace 12 (see col. 6, lines 7-13). The recitation at column 1, lines 32-40 of the Heyer et al. reference, cited by the Examiner as support for her statement that the parallel belts 16 are within the heat treatment apparatus, is nothing more than an acknowledgment of the classic prior art process for diffusion doping with phosphorus in a quartz tube furnace. It is well understood by those skilled in the art that prior art quartz tube furnaces do not utilize conveyor belts of any type. Also contrary to the Examiner's statement quoted above, the "feature 20 in Fig. 1 and col. 5, lines 65-67 and col. 6, lines 1-5" of Heyer et al. bears no resemblance whatsoever in either structure or

function to applicants' specifically claimed "plurality of aligned, periodically-spaced tabs positioned on an outer surface of each of the metal belts for retaining a plurality of the substrates in fixed positions spanning the metal belts." The features 20 of Heyer et al. are, in fact, **removable** quartz trays, on which the previously-coated wafers 10 are placed for conveyance through furnace 12 on the **single** metal belt 14. As stated above, once the wafers 10 of Heyer et al. are placed on the quartz trays 20 near the entrance end of furnace 12, the bottom surface of each of the wafers is covered, which would prevents exposure of those surfaces for purposes of the deposition coating process performed by applicants' specifically claimed invention.

The Tateishi reference adds nothing to the teachings of Heyer et al. so as to render applicants' specifically claimed invention obvious over the combination thereof. Tateishi is directed to a reduced pressure gaseous phase diffusion process carried out in a sealed quartz tube furnace. This is totally unlike the heating-only process of Heyer et al., which is carried out at near atmospheric pressure, since the wafers to be heat treated have been previously coated with a dopant film. Thus, there is no showing or suggestion whatsoever in either of these two references for combining them in the general way suggested by the Examiner. Moreover, any such combination would render the Heyer et al. structure inoperative for its intended purpose and, for the reasons set forth in detail in the preceding remarks, would still fail to yield applicants' specifically claimed structure.

In view of the foregoing amendment and remarks, it is respectfully submitted that claim 26, 27, and 30 are clearly patentable to applicants and that this application is now in condition for being passed to issue with those claims and allowed claims 28 and 29. Favorable action is accordingly solicited.

Respectfully submitted,

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